

SMART7-S™



GNSS SMART ANTENNA FEATURING NOVATEL'S POWERFUL OEM7® AND SPAN® TECHNOLOGY

MAXIMUM PERFORMANCE

The 555 channel receiver and VEXXIS® antenna inside the SMART7-S allow it to receive GPS, GLONASS, BeiDou, Galileo and QZSS signals. Multiple GNSS signals deliver better satellite availability under variable terrain and environmental conditions. The SMART7-S also receives L-Band signals providing easy access to the world-wide correction signals provided by TerraStar.

INTEGRATED INERTIALS

SPAN technology tightly couples inertial measurements and GNSS to improve position accuracy, bridge GNSS outages, provide attitude information and terrain compensation.

ALIGN

NovAtel® ALIGN® technology is optionally supported when combined with a second SMART7 or NovAtel receiver to provide relative heading and velocity that can be used to guide accessory vehicles.

MAXIMUM ACCURACY

The SMART7-S can provide a range of performance accuracies from dual-frequency GLIDE® to full centimeter level RTK. TerraStar services provide decimeter or centimeter level accuracy using globally transmitted satellite corrections.

MAXIMUM CONNECTIVITY

The SMART7-S supports RS-232 and CAN-bus communications.

DURABLE, FIELD-READY DESIGN

This rugged SMART7-S antenna is enclosed in a durable, waterproof housing that meets MIL-STD-810G environmental standards for many years of reliable use in the field. Magnetic and screw mounting is supported.



BENEFITS

- + Centimeter level NovAtel CORRECT® TerraStar-C PRO and RTK accuracy
- + High quality measurements and stable phase center for precision applications

FEATURES

- + GPS, GLONASS, BeiDou, Galileo, QZSS plus TerraStar correction signal reception
- + Simultaneously track up to 3 TerraStar correction service satellites
- + Integrated IMU for SPAN INS functionality
- + Optional heading and relative positioning using ALIGN
- + Advanced ISOBUS-compatible CAN interface supports NMEA2000, NovAtel messages and firmware updates

For more information about our SMART antenna products, visit www.novatel.com/smart-antennas

PERFORMANCE¹

Channel Configuration

555 channels

Signal Tracking

GPS	L1, L2, L2C, L5
GLONASS	L1, L2
Galileo	E1, E5a/b, E5 AltBOC
BeiDou	B1I, B1C, B2I, B2a
QZSS	L1, L2
SBAS	L1
L-Band	

Horizontal Position Accuracy (RMS)

Single point L1/L2	1.2 m
SBAS ²	60 cm
DGPS	40 cm
	(95%) (RMS)
TerraStar-L ^{3,4}	50 cm
TerraStar-C PRO ^{3,4}	40 cm

	3 cm	2.5 cm
RTK	1 cm + 1 ppm (RMS)	
	2.5 cm + 2 ppm (95%)	

Pass-to-Pass Accuracy (95%)

L1/L2 GLIDE Single Point	35 cm
TerraStar-L	15 cm
TerraStar-C PRO	<2 cm

Maximum Data Rate

Measurements	Up to 20 Hz
Position	Up to 20 Hz
INS	Up to 200 Hz

Time to First Fix

Cold start ⁵	<40 s (typical)
Hot start ⁶	<20 s (typical)

Signal Reacquisition

L1	0.5 s (typical)
L2	<1.0 s (typical)

Velocity Accuracy⁷

0.03 m/s RMS

Time Accuracy⁸

20 ns RMS

Attitude Accuracy (deg)⁹

	(95%)	(RMS)
Roll	0.06	0.03
Pitch	0.06	0.03
Heading	0.5	0.1

PHYSICAL AND ELECTRICAL

Dimensions 220 L x 192 W
x 66 H mm

Weight <1.1 kg

Connector 14-pin Tyco Ampseal

Mounting

4 x M4 screw inserts
Integrated magnetic mount

Power

Input voltage range
+7 to +30 VDC
Power consumption¹⁰
4 W (typical)

Status LEDs

Multi-colored, daylight viewable

COMMUNICATION PORTS

RS-232 dedicated ports	3
CAN Bus	1
1 PPS	1
Ground speed output	1

ENVIRONMENTAL

Temperature

Operating -40°C to +70°C
Storage -45°C to +80°C

Humidity

MIL-STD-810G Method 507.6

Immersion

MIL-STD-810G Method 512.6

Shock

MIL-STD-810G Method 516.7

Solar Radiation

EN60950-22 8.2
ISO 9022-9, Method 20,
Severity Degree 03

Salt Fog

IEC 60068-2-11

Sand and Dust

MIL-STD-810G Method 510.5

Vibration

Random MIL-STD-810G,
Method 514.7

Ingress Protection Rating IP69

COMPLIANCE

FCC, ISED, CE Mark, E-Mark

STANDARD FEATURES

- 20 Hz data rates
- Field upgradable software
- PAC multipath mitigating technology
- Differential correction support for RTCM 2.1, 2.3, 3.0, 3.1, CMR, CMR+ and RTCA
- Navigation output support for NMEA 0183 and detailed NovAtel ASCII and binary logs
- GLIDE smoothing algorithm
- 1 PPS output
- Ground speed output

CORRECTION SERVICES

- TerraStar-L
- TerraStar-C PRO
- RTK ASSIST™
- RTK ASSIST PRO

FIRMWARE SOLUTIONS

- GLONASS tracking
- Galileo tracking
- BeiDou tracking
- L-Band tracking
- ALIGN
- RTK
- SPAN

OPTIONAL ACCESSORIES

- Mounting plate
- Interface cable

For the most recent details of this product contact NovAtel Customer Support: www.novatel.com/support

novatel.com

sales@novatel.com

1-800-NOVATEL (U.S. and Canada) or 403-295-4900

China 0086-21-68882300

Europe 44-1993-848-736

SE Asia and Australia

61-400-883-601

Version 2 Specifications subject to change without notice.

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¹ Typical values (open sky conditions). Performance specifications subject to GNSS system characteristics, Signal-in-Space (SIS) operational degradation, ionospheric and tropospheric conditions, satellite geometry, baseline length, multipath effects and the presence of intentional or unintentional interference sources.

² GPS only.

³ Requires subscription to TerraStar data service. Subscriptions available from NovAtel.

⁴ RMS/95% accuracy under ideal conditions and may vary based upon user's geographic region, ionospheric activity, scintillation levels, GNSS availability and constellation health, multipath conditions and presence of interference sources.

⁵ Typical value. No almanac or ephemerides and no approximate position or time.

⁶ Typical value. Almanac and recent ephemerides saved and approximate position and time entered.

⁷ Export licensing restricts operation to a maximum of 515 metres per second.

⁸ Time accuracy does not include biases due to RF or antenna delay.

⁹ With SPAN model firmware installed.

¹⁰ Power consumption values for GPS L1/L2.